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**Matthews**

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(54) **FLASHLIGHT SECUREMENT SYSTEMS**

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**Related U.S. Application Data**

(63) Continuation-in-part of application No. 09/606,605, filed on Jun. 29, 2000.

(51) **Int. Cl.**<sup>7</sup> ..... **F21L 4/00**

(52) **U.S. Cl.** ..... **362/191; 362/396; 362/474; 362/190**

(58) **Field of Search** ..... **362/190, 191, 362/103, 118, 396, 474**

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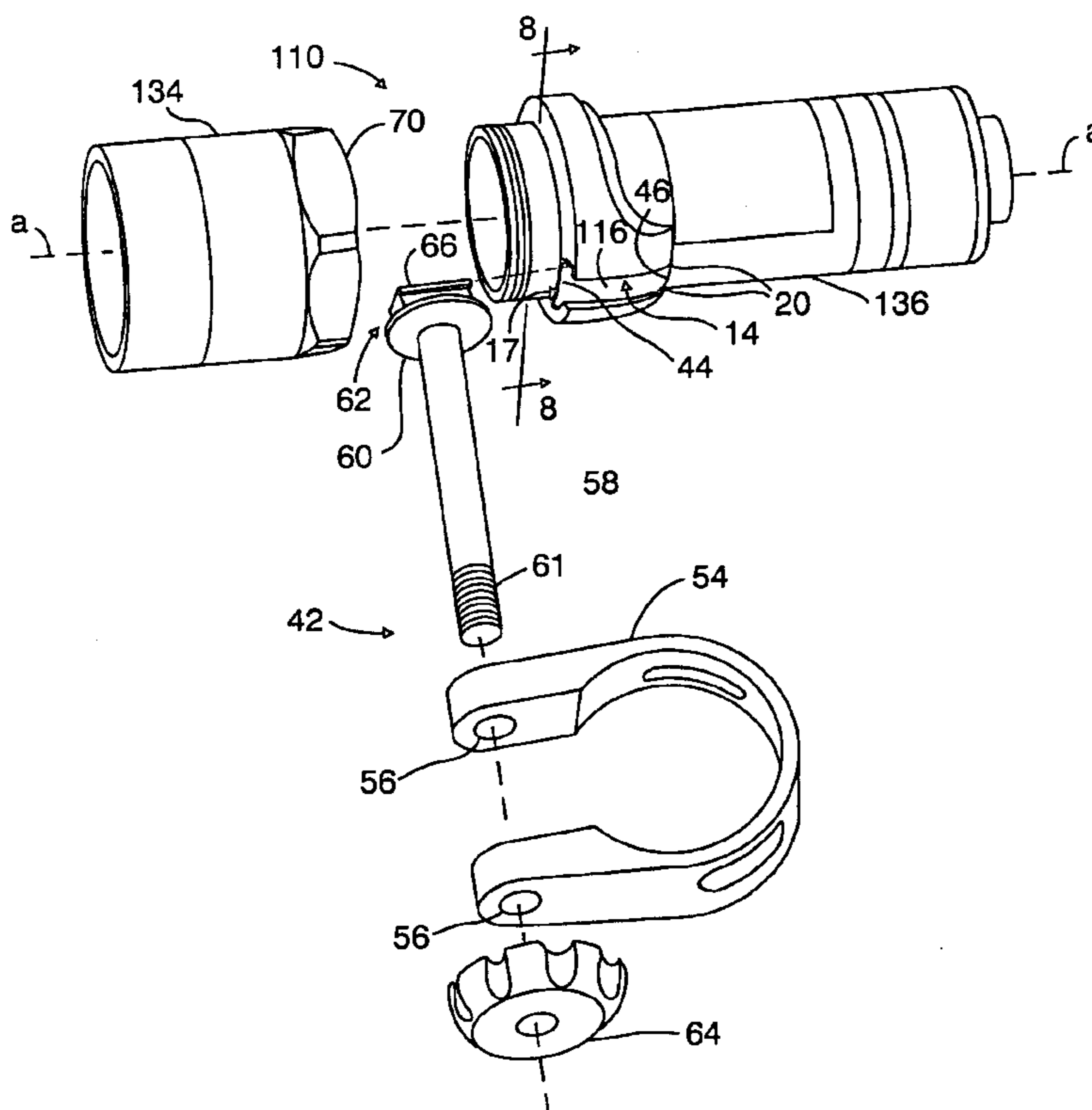
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(57) **ABSTRACT**

Apparatus and methods directed to a hand holdable flashlight including a battery housing having an undercut groove to which is removably fitted a head of an interface device which itself is removably securable to the object.

**36 Claims, 4 Drawing Sheets**



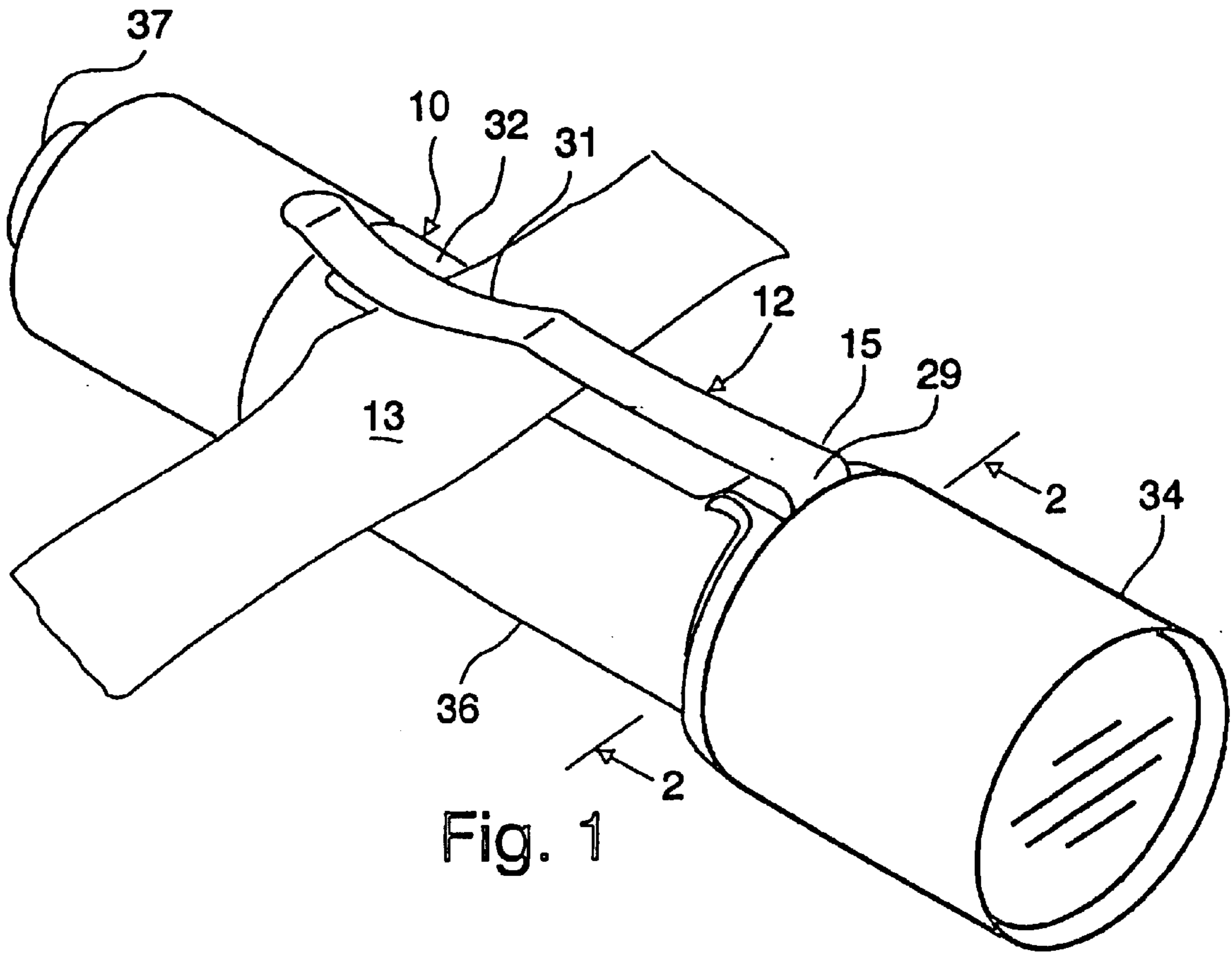


Fig. 1

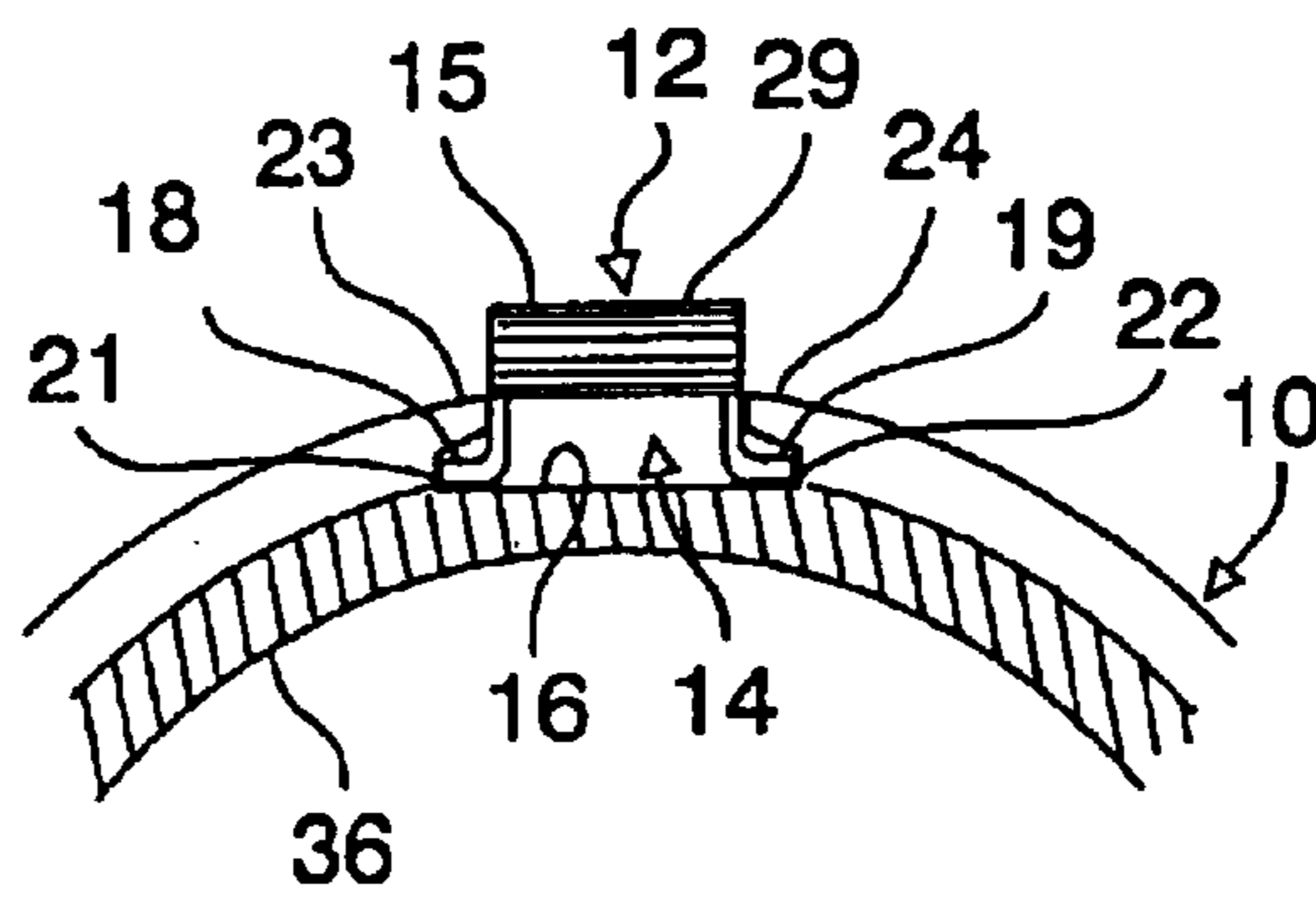


Fig. 2



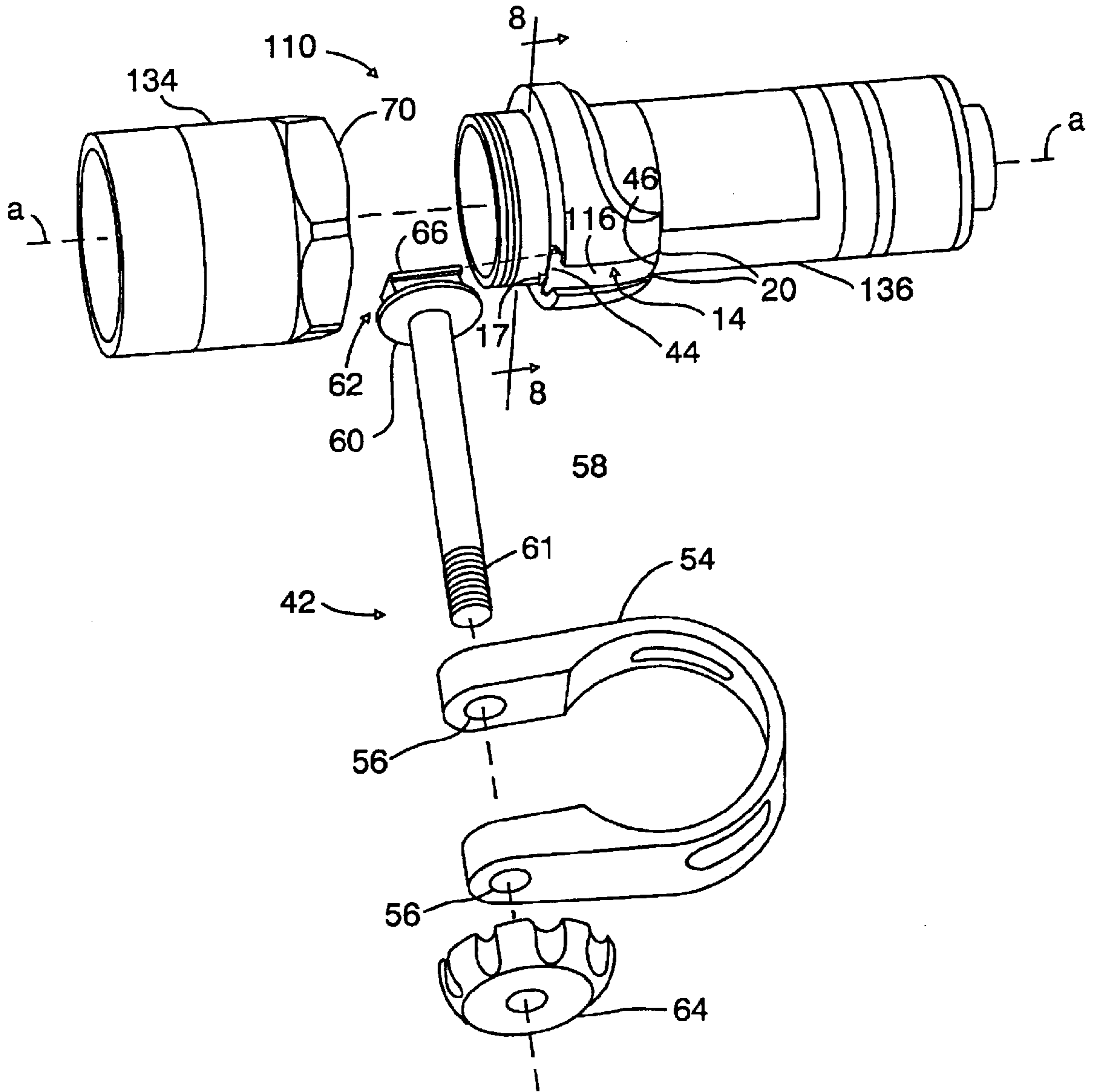


FIG. 7

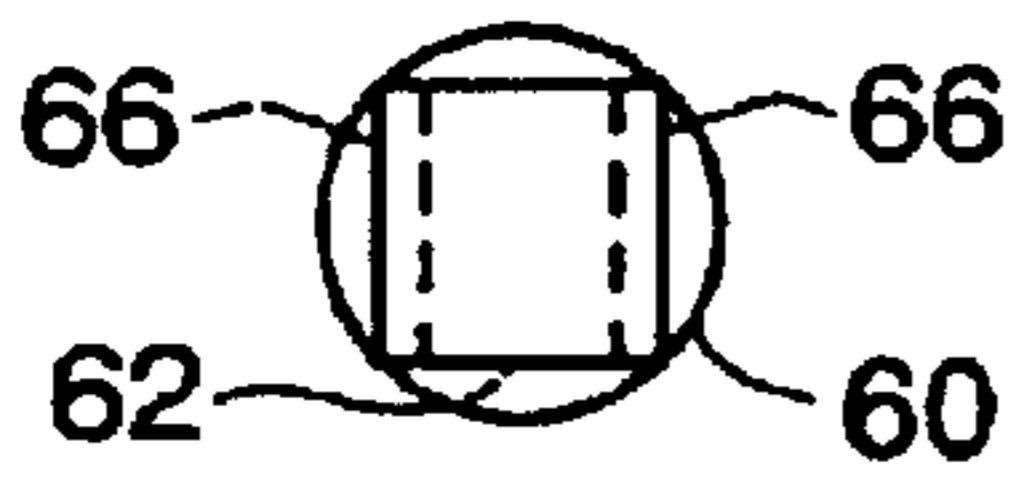
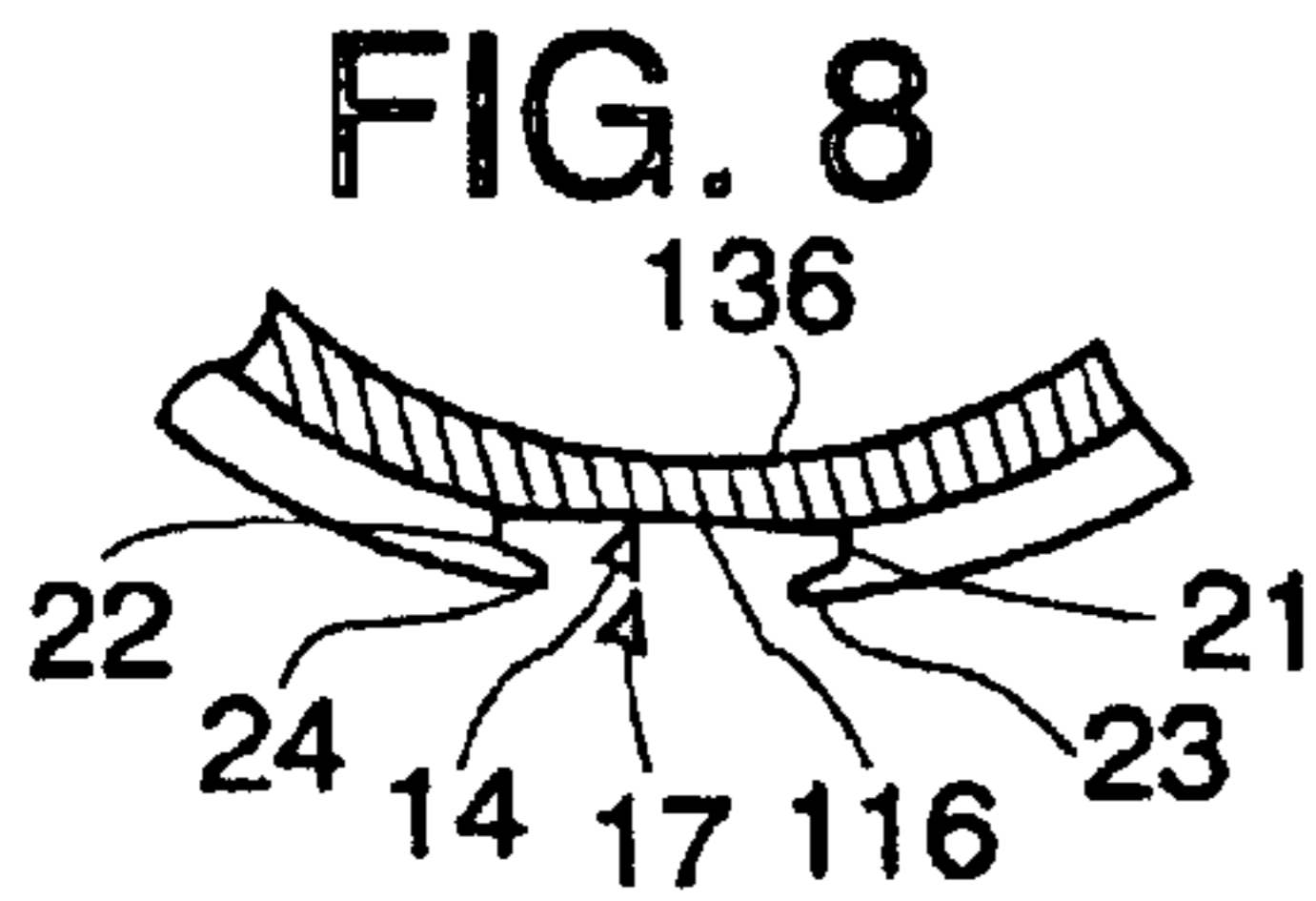


FIG. 9

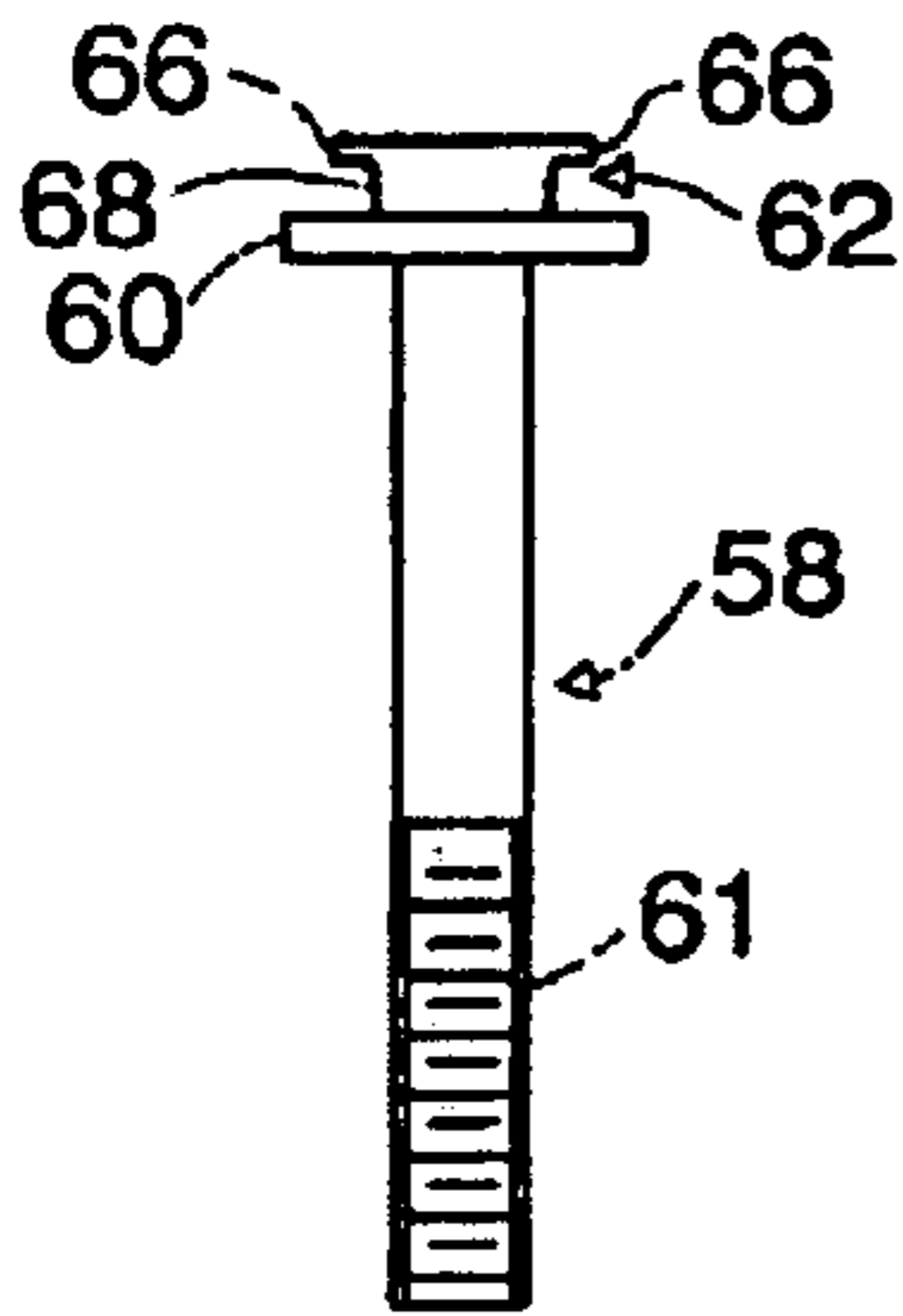


FIG. 10

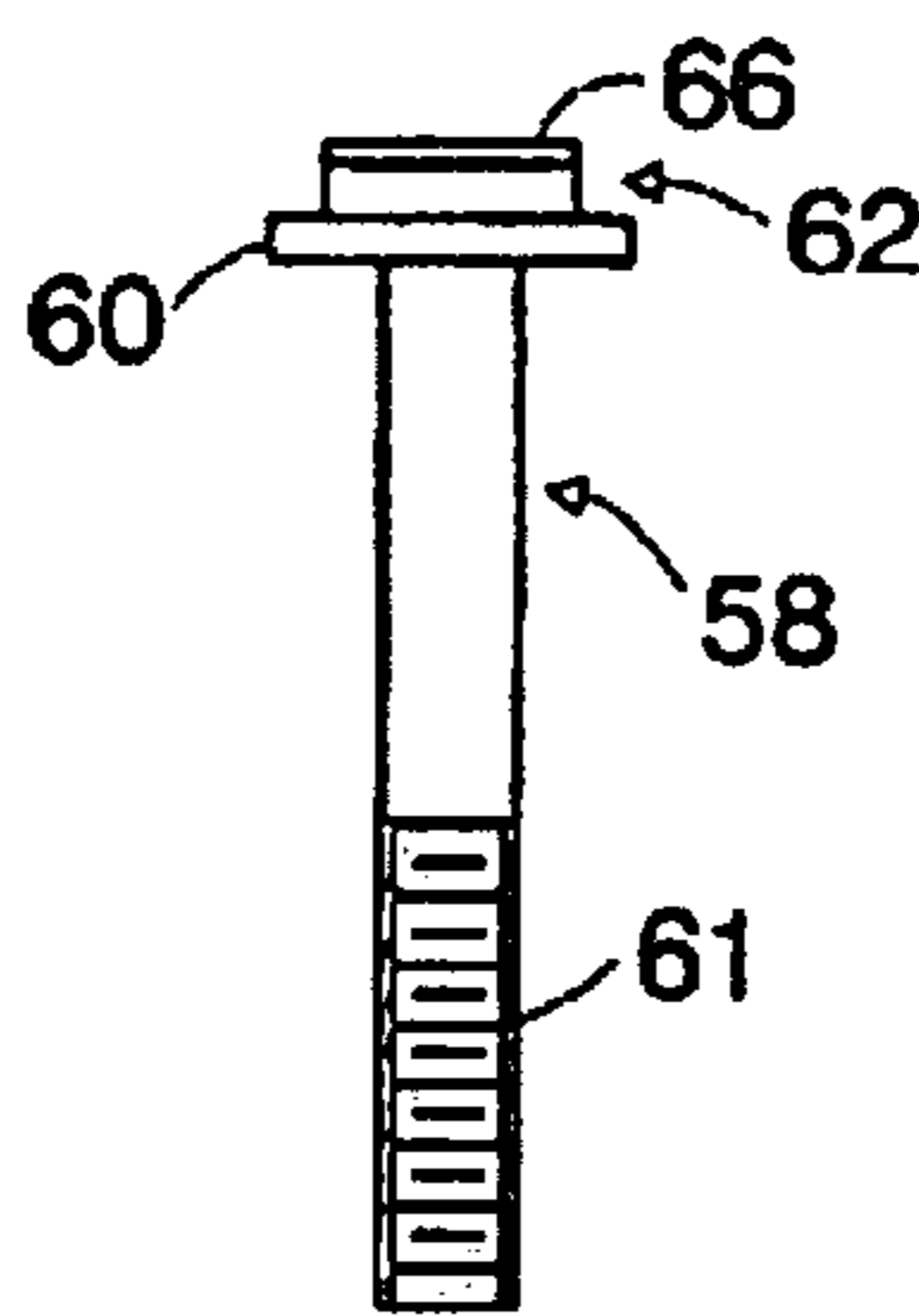


FIG. 11

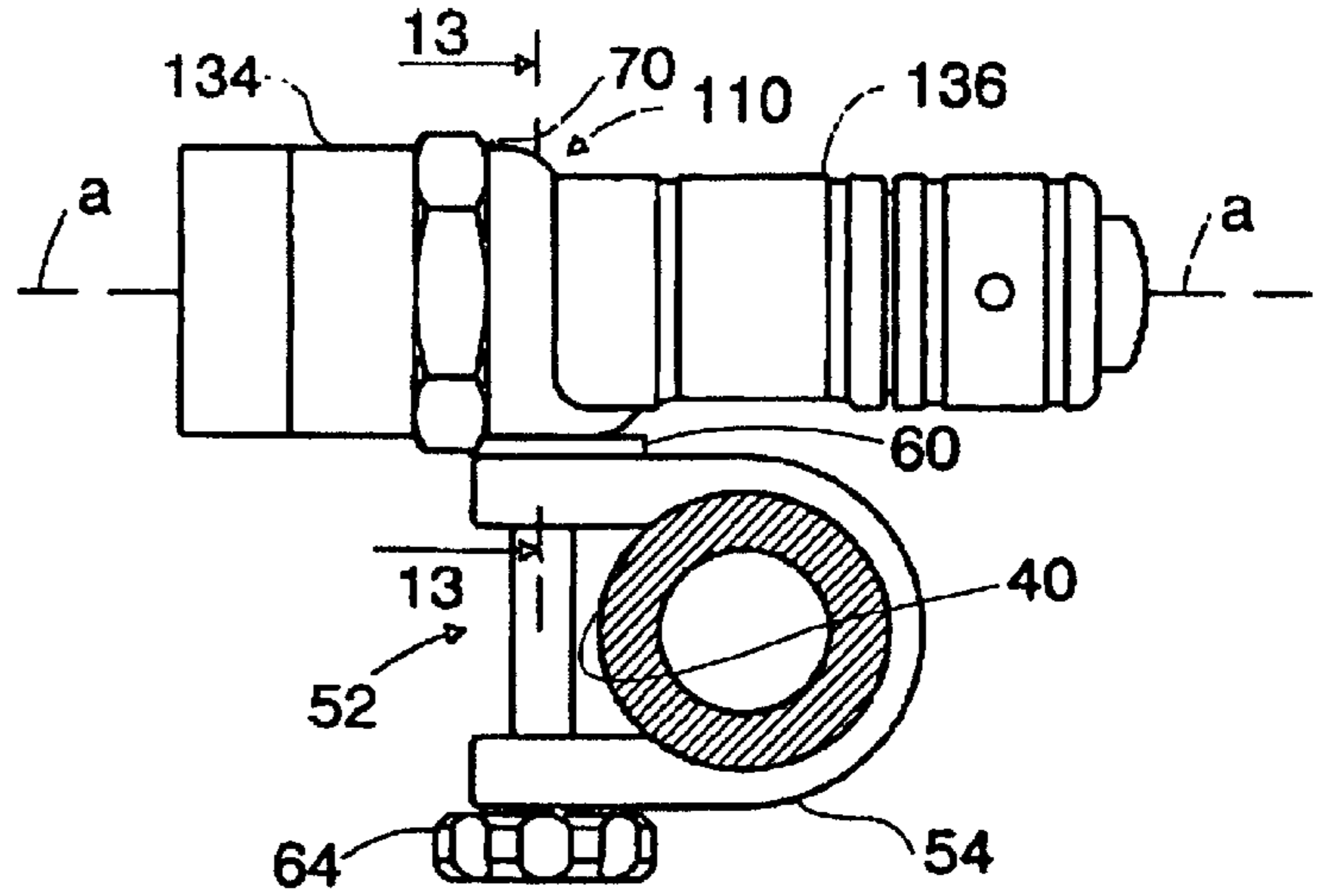


FIG. 12

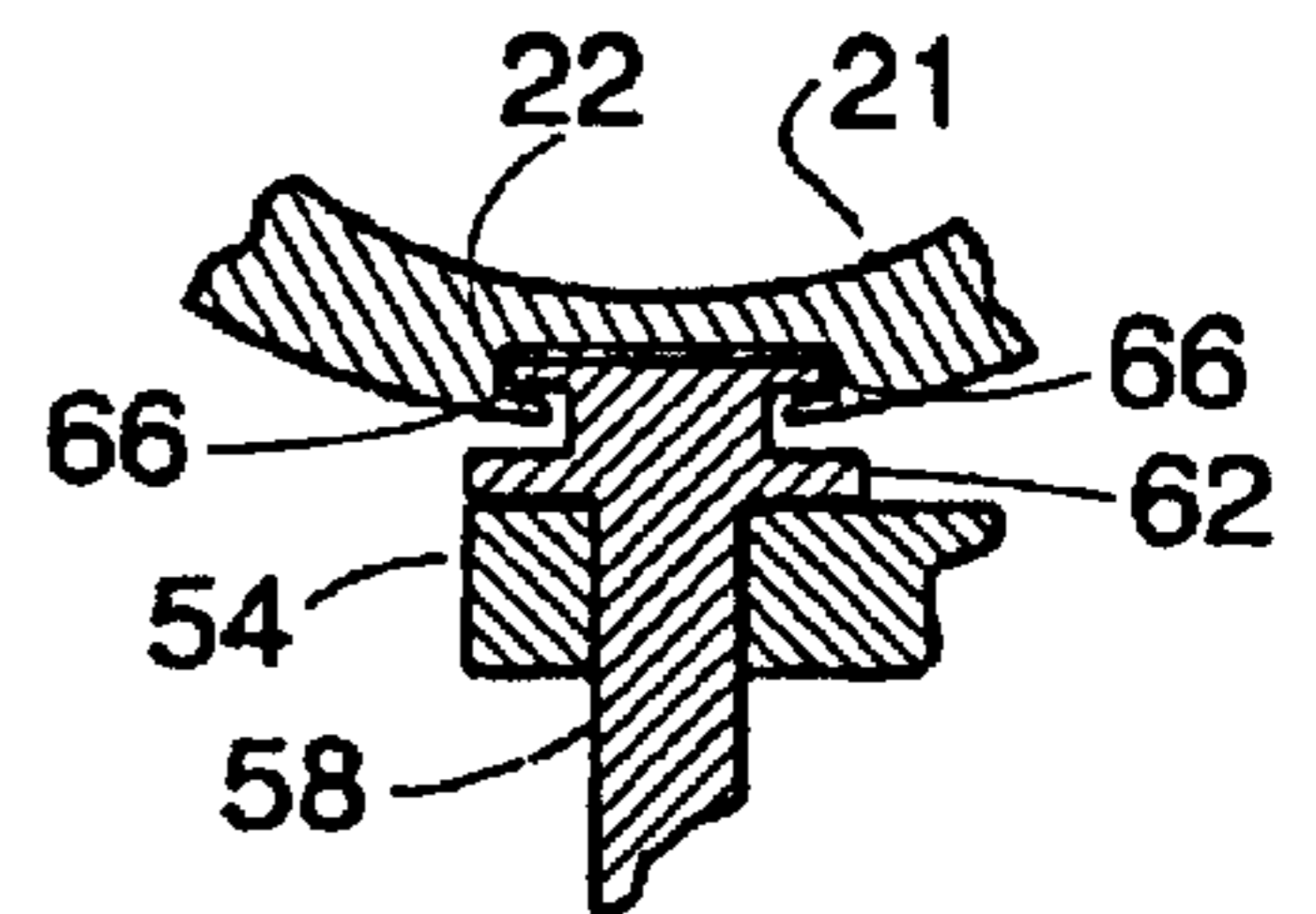


FIG. 13

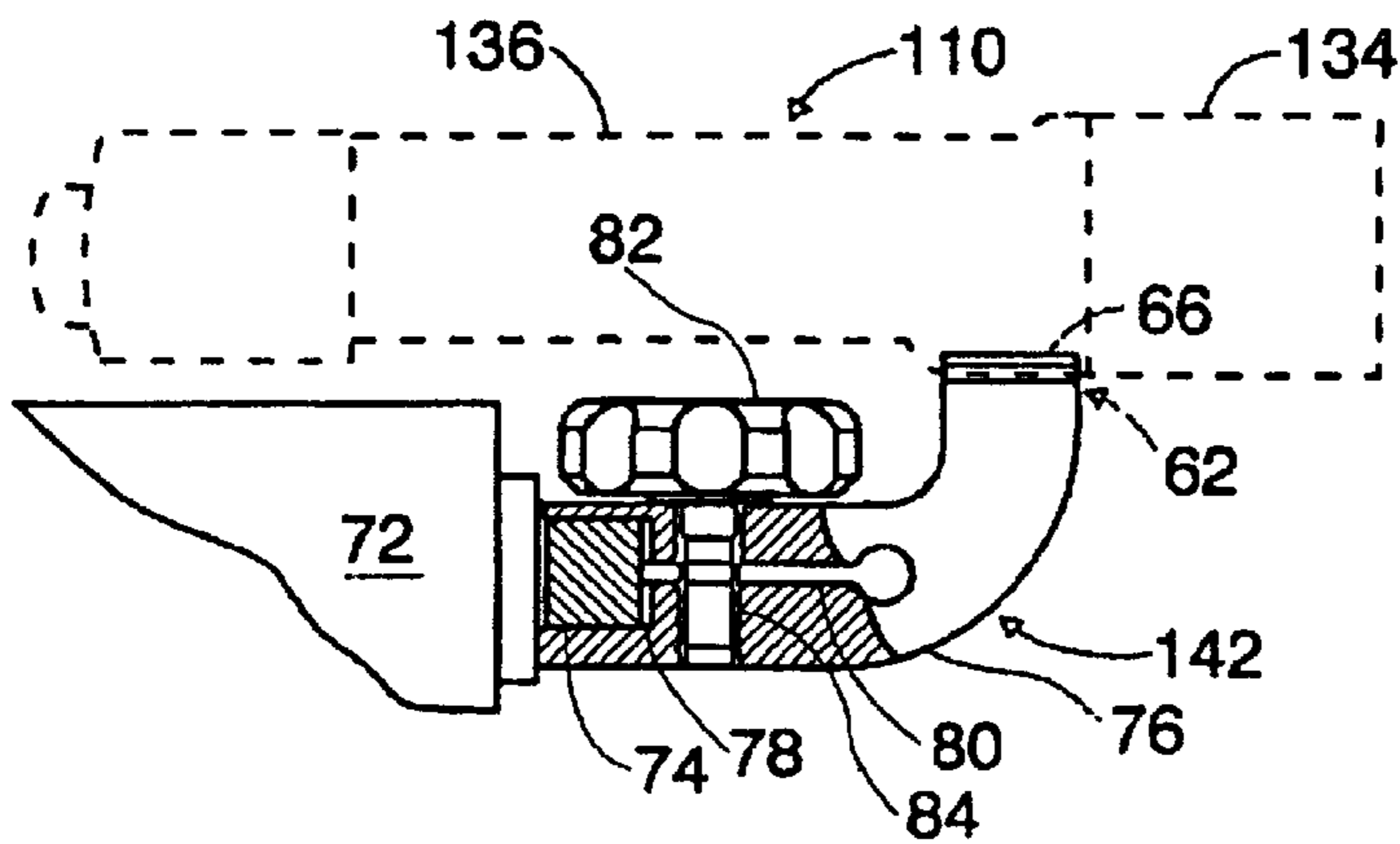


FIG. 14

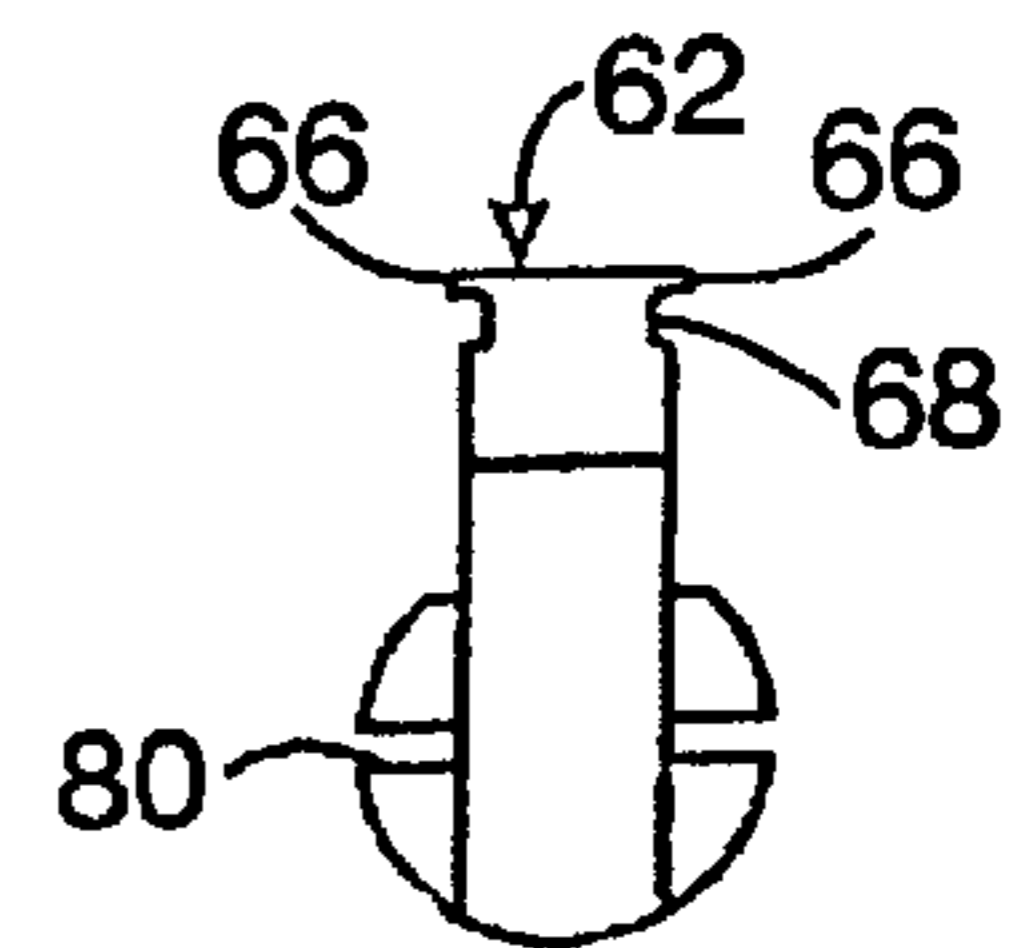


FIG. 15

**FLASHLIGHT SECUREMENT SYSTEMS****CROSS REFERENCE TO RELATED APPLICATION**

This application is a continuation-in-part of co-pending U.S. patent application Ser. No. 09/606,605, filed Jun. 29, 2000, incorporated herein by reference.

**BACKGROUND OF THE INVENTION**

This invention relates to flashlight securement systems, and more particularly to flashlight apparatus removably securable to an object and methods for effecting such securement.

The aforementioned parent application Ser. No. 09/606,605 discloses apparatus and methods for equipping a portable device, such as a flashlight, with a clip for attachment to an object. From one aspect thereof, that invention resides in a method of equipping a portable device with a clip for attachment thereof to an object. That aspect of the invention more specifically resides in the combination of providing such device with an undercut groove, providing the clip with a head fitting into that undercut groove, and attaching that clip to the portable device by fitting that head of the clip into that undercut groove. From a related aspect thereof, the invention resides in a portable device, comprising, in combination, an undercut groove, and a device attachment clip having a head fit into that undercut groove. The invention resides also in a clip for attachment of a portable device to an object, comprising, in combination, a bent over end portion, and lateral protrusions on that bent over end portion.

Although clip attachment systems for a portable device such as a flashlight are useful in many situations, there are other situations in which it is desirable to secure a flashlight to an object without utilizing a clip as the securement device. In such situations a flashlight may be equipped with an integral securement device specifically for securement to a particular type of object, which securement device is not conveniently removable from the flashlight for permitting the flashlight to be utilized as a hand held light. For example, prior art bicycle lights are generally manufactured as being specifically for mounting to a bicycle, including a mount integral with the light such that the light is not conveniently removable from the bicycle nor practical for use as a hand held flashlight.

One type of flashlight apparatus which does not include a clip but in which a flashlight is securable to an object and may be conveniently removed from the object for hand held use, is disclosed in U.S. patent application Ser. No. 10/133,894, filed Apr. 26, 2002 by Paul Y. Kim and assigned to the assignee of the present invention. The flashlight apparatus taught therein includes a flashlight with a grooved rear cap secured to the flashlight's battery housing, the groove being perpendicular to the cap's longitudinal axis. An interface device includes a first preferably arcuate portion adapted to be removably fitted into the perpendicular preferably annular groove for holding the flashlight, and the interface device includes a second portion adapted to be secured to the object. Another preferably arcuate member may be fitted into the groove for securing the interface device's first portion to the rear cap.

**SUMMARY OF THE INVENTION**

Against this background, the present invention provides apparatus and methods directed to a flashlight including a battery housing having an undercut groove for facilitating

the flashlight's securement to and removal from an interface device which itself is adapted to be removably secured to the object.

According to one aspect of the present invention, there is provided a flashlight apparatus securable to an object, comprising in combination: a flashlight including a battery housing; an undercut groove in the battery housing, the undercut groove having an opening at one end thereof; an interface device adapted to be removably secured to the object and including a head adapted to be removably fitted into the undercut groove through the opening for holding the flashlight; and a component secured to the battery housing in the vicinity of such one end for blocking removal of the head from the undercut groove through the opening when fitted into the undercut groove, the component being removable from the vicinity of such one end for permitting removal of the head from the undercut groove through the opening. The component is removable from the vicinity of such one end for permitting fitting of the head into the undercut groove through the opening. The component is preferably removably secured to the housing, forwardly of such one end of the undercut groove, and the component may comprise a component of the flashlight, preferably a lamp housing of the flashlight. In a preferred embodiment, at least a portion of the undercut groove is closed at the undercut groove's other end (preferably the rearward end) for blocking the head at such other end when the head is fitted into the undercut groove.

The preferred embodiment of the present invention includes an undercut groove having lateral grooves below overhangs; and the head of the interface device includes lateral protrusions fitting into the lateral grooves when the head is fitted into the undercut groove. The lateral grooves are preferably closed at the other end of the undercut groove for blocking the head at such other end when the head is fitted into the undercut groove.

According to a further aspect of the present invention, a method is provided for securing a flashlight to an object, comprising: providing a battery housing for the flashlight including an undercut groove in the battery housing, the undercut groove having an opening at one end thereof; providing a component adapted to be secured to the battery housing in the vicinity of such one end of the undercut groove and to be removed from the vicinity of such one end; providing an interface device adapted to be removably secured to the object and including a head adapted to be removably fitted into the undercut groove through the opening for holding the flashlight; placing the flashlight to the interface device with the head fitted into the undercut groove through the opening; and securing the component to the battery housing in the vicinity of the one head of the undercut groove for blocking removal of the head through the opening.

Preferably at least a portion of the undercut groove is closed at another end of the undercut groove; and during the flashlight placing step, the head is blocked at the other end by such portion of the undercut groove when the head is fitted into the undercut groove. The undercut groove preferably includes lateral grooves under overhangs, the head of the interface device includes lateral protrusions for being fitted into the lateral grooves; and during the flashlight placing step, the lateral projections are fitted into the lateral grooves. The lateral grooves are preferably closed at another end of the undercut groove; and during the flashlight placing step, the head is blocked at such other end.

The method includes removably securing the interface device to the object (for example, to a bicycle or to a

binocular), which step may be performed either before or after the flashlight is removably secured to the interface device.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed to be characteristic of the invention, together with further advantages thereof, will be better understood from the following description considered in connection with the accompanying drawings in which preferred embodiments of the present invention are illustrated by way of example. It is to be expressly understood, however, that the drawings are for the purpose of illustration and description only and are not intended as a definition of the limits of the invention.

FIG. 1 is a perspective view of a portable device in the form of a flashlight with a clip for attachment thereof to an object, such as a piece of clothing, according to the aforementioned parent application Ser. No. 09/606,605;

FIG. 2 is a fragment of a section taken on the line 2—2 in FIG. 1 and enlarged;

FIG. 3 is a view similar to FIG. 1 with clip and piece of clothing removed;

FIG. 4 is a fragment of a section taken on the line 4—4 in FIG. 3 and enlarged;

FIG. 5 is a bottom view on an enlarged scale of the clip shown in FIG. 1;

FIG. 6 is a side view of the clip shown in FIG. 1 and in FIG. 5 on an enlarged scale, and ready for insertion into an undercut groove in the portable device, such as in FIG. 3, for completion of the assembly, such as seen in FIG. 1;

FIG. 7 is an exploded perspective view of a preferred embodiment of a flashlight apparatus securable to an object, according to the present invention, showing a flashlight securable to an interface device which is securable to an object;

FIG. 8 is a fragmentary cross-section of the flashlight battery housing of FIG. 7, showing the undercut groove, taken along the line 8—8 of FIG. 7 in the direction of the appended arrows;

FIG. 9 is a top plan view of a portion of the interface device of FIG. 7, showing the head for being removably fitted into the undercut groove of FIGS. 7 and 8;

FIG. 10 is a front elevation view of the interface device portion of FIG. 9;

FIG. 11 is a side elevation view of the interface device portion of FIGS. 9 and 10;

FIG. 12 is a side elevation view of the assembled flashlight apparatus of FIG. 7, shown attached to a cylindrical object such as a bicycle handlebar;

FIG. 13 is a fragmentary cross-section of the assembled flashlight apparatus of FIG. 12, taken along the line 13—13 of FIG. 12 in the direction of the appended arrows;

FIG. 14 is a side elevation view, partly in cross-section, of a second preferred embodiment of the flashlight apparatus according to the present invention, representing a flashlight secured to an interface device which is secured to a binocular; and

FIG. 15 is a front elevation view of the interface device of FIG. 14.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1—6 of the drawings are illustrative of a flashlight 10 or other device equipped with a clip 12 for attachment of

such device to a fragmentally illustrated piece of clothing, belt or other object 13, and of method of equipping such portable device with a clip for attachment thereof to an object, as disclosed in the aforesaid parent application Ser. No. 09/606,605. Within the scope of the invention, the expression “attachment” in the preceding sentence is intended to be sufficiently broad to cover a holstering of the clip 12 in a holstering device therefor, such as in the type of support bracket shown at 30 in Valenti U.S. Pat. No. 5,630,535 which is hereby incorporated by reference herein.

According to a preferred embodiment, such portable device 10, comprises a combination of an undercut groove 14 and a clip 12, herein sometimes referred to as “device attachment clip,” having a head 15 fit into that undercut groove.

By way of example, the illustrated embodiment provides the portable device 10 with an undercut groove 14 and the clip 12 with a head 15 fitting into that undercut groove, and attaches that clip to that portable device by fitting such head of the clip into the undercut groove of the portable device.

The device 10 may be provided with a flat or other sliding surface 16 for the head 15 of the clip 12 extending into the undercut groove 14 through an opening 17 at one end of the undercut groove 14. The head of the clip may be press-fit into such undercut groove.

The head 15 of the clip is preferably held in the undercut groove 14 by spring action. There may be a resilient mount of the head 15 of the clip in the undercut groove 14, such as more fully disclosed below.

Pursuant to an embodiment of the invention, the head 15 of the clip 12 is provided with or has lateral protrusions 18 and 19 fitting into lateral grooves 21 and 22 below overhangs 23 and 24 of the undercut groove 14, such as seen in FIG. 2 with the aid of FIG. 4. As seen in FIGS. 2 and 6, the lateral protrusions 18 and 19 preferably are offset so as to be in a plane 26 spaced, such as by a distance or as seen at 27 from a plane 28 through an adjacent portion of the clip.

Provision of the head 15 of the clip 12 includes bending over a portion of that clip. There thus is a bent over portion or bight portion 29 of the clip at the head of that clip. Pursuant to a preferred embodiment of the invention, an end portion of the clip is bent over so that such portion converges toward an adjacent portion of that clip, such as seen in FIG. 6 which shows the bent over end portion of the clip converging toward an adjacent portion of that clip at the head of that clip.

In practice, this spring-biases the clip head in the undercut groove 14 or under its overhangs 23 and 24. For a realization of such resilient mount of the clip 12, such clip may be placed on the device 10 with the clip head 15 on the outer portion of the flat or other sliding surface 16. The clip is then depressed such as midway between its opposite ends until the head 15 can slide through the opening 17 into the undercut groove 14 as the clip is moved in that direction. At least a portion of the undercut groove 14 may be closed at its other end, such as the closed ends 20 of the lateral grooves 21 and 22 opposite the opening 17 as seen in FIG. 3, preventing the head 15 from exiting the undercut groove 14 during such movement. When the clip is thereupon released, the resiliency of the clip strongly holds its head 15 in the undercut groove below overhangs 23 and 24.

The different features so far disclosed may be used alternatively or in combination.

Accordingly, an end portion of the clip 12 is provided with lateral protrusions 18 and 19 fitting into lateral grooves 21 and 22 below overhangs 23 and 24 of the undercut groove

**14** and is bent over toward a remainder of that clip for formation of the head **15** of the clip. In apparatus terms, lateral protrusions **18** and **19** at an end portion of the clip fit into lateral grooves **21** and **22** below overhangs **23** and **24** of the undercut groove **14**, and such end portion is bent over toward a remainder of that clip **12** at the head of that clip. In such combination, the mentioned end portion of the clip may be bent over so as to converge toward a remainder of the clip for formation of the head of the clip, such as shown in FIG. 6. The lateral protrusions **18** and **19** again may be offset so as to be in a plane **26** spaced from a plane **28** through the end portion of the clip, such as by a distance or as seen at **27**.

The clip **12** may have or be shaped with a projecting portion **31** for engaging the object **13** in conjunction with the portable device **10**. According to an embodiment of the invention, this may be combined with the above mentioned bending over of an end portion of the clip, or inclusion of a bent over end portion of that clip, preferably in convergence to an adjacent portion of the clip, such as seen in FIG. 6 at **15** and **29**.

FIGS. 1 and 3 show presence or formation of a flat **32** formed on the portable device **10** adjacent the projecting portion **31** of the clip best seen in FIG. 6. In practice, this helps engagement of the object **13** by the clip **12** and device **10**.

The portable device **10** may have or be provided with a removable component **34** at the undercut groove **14**. The head of the clip may be releasably retained in that undercut groove with that removable component of the portable device. An embodiment of the invention thus may have an attachment clip retainer including a removable component **34** of the portable device **10** at the head **15** of the clip **12**. In practice, this helps accidental dislodgment of the clip from the portable device **10**. On the other hand, because of the presence of such attachment clip retainer, the head of the clip may be releasably retained in the undercut groove for manual removal of the clip **12** from the portable device **10**, such as after a temporary removal of the component **34** from the remainder of the device **10**. Accordingly, such portable device may be manually equipped with a clip **12** when desired, but may be used without such clip whenever that is preferred by the user.

The portable device may be or may be shaped as a flashlight having the undercut groove **14**, such as seen in FIGS. 1 to 4. In that case such flashlight may have or may be equipped with a lamp housing being the above mentioned component **34** and extending to the vicinity of the undercut groove **14**. In this manner, the head **15** of the clip may be retained in that undercut groove with the aid of such lamp housing, such as seen in FIG. 1 which shows the lamp housing **34** secured to the flashlight's battery housing **36** at the installed clip's bent over portion **29**, blocking removal of the head **15** from the undercut groove **14** through the opening **17**. When the clip is not installed, the removable lamp housing **34** may be secured to the battery housing **36** in the vicinity of the undercut groove's opening **17**, as shown in FIG. 3.

In principle, the flashlight may be of a conventional type, having a barrel or housing **36** for containing batteries for energizing an electric light source in the lamp housing at **34**, such as via a tailend switch **37** or other ON/OFF switching device.

A clip **12** for attachment of a flashlight **10** or other portable device to an object **13** comprises a combination of a bent over end portion **29** and lateral protrusions **18** and **19**

on that bent over portion. Such lateral protrusions preferably are offset so as to be in a plane **26** spaced from a plane **28** through an adjacent portion of that clip, such as seen at **27**. Such bent over end portion **29** of the clip **12** again preferably converges toward an adjacent portion of the clip, such as seen in FIG. 6 at **15** and **29**.

The clip **12** may have an object-engaging projection **31** at an end region of that clip opposite the bent over end portion **29** such as explained above with reference to FIGS. 1, 5 and 6.

Turning to FIGS. 7-13, there is shown a flashlight securement apparatus including a flashlight **110** removably securable to an object, for example a bicycle handlebar **40** shown in cross-section in FIG. 12, through an included interface device **42**. Similarly to the flashlight **10** of FIG. 3, the flashlight **110** includes a battery housing **136** having an undercut groove **14** with an opening **17** at one end of the undercut groove **14**, preferably the undercut groove's forward end **44** directed toward the front or lamp housing **134** of the flashlight **110**. The undercut groove **14** is preferably parallel to the longitudinal axis *a* of the battery housing **136**. At least a portion of the preferred embodiment of the undercut groove **14** is closed at the undercut groove's other end **46**, such as the closed ends **20** of the lateral grooves **21** and **22** which are included by the undercut groove **14**.

The lateral grooves **21**, **22**, as seen in FIG. 4, are beneath respective overhangs **23**, **24** of the undercut groove **14**. The battery housing **136** in FIG. 8 is effectively the battery housing **36** of FIG. 4 shown upside down; the undercut groove **14** in FIG. 8 is shown downwardly disposed so that the "overhangs" **23**, **24** appear below the lateral grooves **21**, **22**. Nevertheless, for consistency in describing the structure of the undercut groove **14** in both FIGS. 4 and 8 and elsewhere in the drawings, in the terminology used herein to items **23** and **24** are referred to as "overhangs". Accordingly, in FIG. 8 the lateral grooves **21** and **22** are considered herein as being below the overhangs **22** and **23**, respectively.

The lateral grooves **21**, **22** respectively extend along opposite sides of the undercut groove surface **116** which is preferably flat similarly to the flat surface **16** shown in FIG. 4. The lateral grooves **21**, **22** are open at the undercut groove's open end **44** and are closed at the undercut groove's other end **46** such as at the closed ends **20** of the lateral grooves **21** and **22** as seen in FIGS. 3 and 7.

The interface device **42** includes a clamp or other securement mechanism for removably securing the interface device **42** to an object **40**. In the preferred embodiment shown in FIGS. 7 and 12, the interface device **42** includes a clamping device **52** for being clamped to a cylindrical or tubular object **40** such as the handlebar of a bicycle. The clamping device **52** includes a resilient C-clamp **54**, fabricated of a resilient polymeric material such as marketed under the trademark WELLAMID by Wellman Inc., or another resilient or flexible material such as nylon. The ends of the C-clamp **54** each include an aperture **56**, the apertures **56** being aligned for receiving a bolt **58** having a flange **60** at one end, the clamp **52** including a nut **64** for engaging threads **61** along the bolt **58** in the vicinity of the bolt's other end. The ends of the C-clamp **54** may be urged apart to admit the cylindrical object **40** fitting in the C of the C-clamp **54**, whereupon the bolt **58** is inserted through the apertures **56** and the nut **64** is caused to be threadably engaged with the threads of the bolt **56**. Tightening of the nut **64** on the bolt **58** with the bolt flange **60** and nut **64** straddling the C-clamp **54** and in contact engagement with the ends thereof, cause the C-clamp **54** to be clamped upon the cylindrical object **40**



and to be secured thereto. Reversal of such securing procedure permits the clamping device **52** to be removed from the object **40**.

The interface device **42** includes a head **62** which in the preferred embodiment of FIG. 7 is secured to the flange **60** and is preferably unitary therewith. The head **62** is configured to be fitted into the undercut groove **14** in the flashlight housing **136**, for holding the flashlight **110**. The head **62** includes lateral protrusions **66** dimensioned and longitudinally extending for being fitted into the lateral grooves **21**, **22** through the opening **17** at the preferably forward end **44** of the undercut groove **14** (see FIG. 7). The width of the neck portion **68** of the head **62**, under the lateral protrusions **66** (see FIG. 10), is less than the lateral separation of the overhangs **23**, **24** for permitting the head **62** to be slidingly inserted through the opening **17** into the undercut groove **14**, and the lateral protrusions **66** into the lateral grooves **21**, **22**. The closed ends **20** of the lateral grooves **21**, **22** at the undercut groove's rearward end **46** block the lateral protrusions **66** and hence the head **62** from being removed from the undercut groove **14** through the undercut groove's rearward end **46**.

The invention includes a component which is secured to the battery housing **136** in the vicinity of the undercut groove's open end **44** for blocking removal of the head **62** from the undercut groove **14** through the opening **17** when the head **62** is fitted into the undercut groove **14**. This component also is removable from the vicinity of the open end **44** for permitting removal of the head **62** from the undercut groove **14** through the opening **17** as well as for permitting fitting of the head **62** into the undercut groove **14** through the opening **17**. In the preferred embodiment, the component is secured to the housing **136** and is entirely removable from the housing **136**. As shown in the preferred embodiment of FIGS. 7 and 12, such component comprises a component of the flashlight **110** and is preferably the lamp housing **134** of the flashlight **110**. When the lamp housing **134** is threadably secured to the flashlight's battery housing **136** forwardly of the undercut groove's open end **44**, the rear annular edge **70** of the lamp housing **134** blocks the fitted head **62** from being removed from the undercut groove **14** through the opening **17**. The lamp housing rear edge **70** may be placed into contact with the flange **60** or the head **62**, in which event the rear edges of the lateral protrusions **66** may be pressed against the closed ends **20** of the lateral grooves **21**, **22**, for more firmly securing the head **62** of the interface device **42** to the housing **136** of the flashlight **110**. The head **62** may be removed from the undercut groove **14** longitudinally through the opening **17** following removal of the lamp housing **134** from the battery housing **136**, when desired.

A second preferred embodiment of the present invention, depicted in FIGS. 14 and 15, comprises the flashlight **110** secured to a binocular **72** through the interface device **142**. The binocular **72** is of a type which includes, or is adapted to include, a forwardly directed protuberance **74** situated on the binocular housing, preferably on the hinge between the binocular's telescopes. Such binoculars are conventional and well known, as is the protuberance **74** situated as described, which protuberance **74** is conventionally used for securing the binocular to a tripod.

A preferred configuration of the interface device **142** includes a generally cylindrical member **76** having a blind longitudinal bore **78** at one end for fittingly receiving the protuberance **74** of the binocular **72**. A lateral slit **80** longitudinally extends from the interior of the interface device to the bore **78**. A thumbscrew **82** extends through a

bore **84** in the member **76** perpendicular to the slit **80** and is threadably engaged with the portion of the bore **84** below the slit **80** as viewed in the drawing of FIG. 14. Tightening of the thumbscrew **82** causes a decrease in the slit separation (i.e. in the height of the slit **80** as viewed in FIG. 14), thereby urging the walls of the bore **78** to grasp the protuberance **74** and to thereby secure the interface device **142** to the binocular **72**.

The member **76** of the interface device **142** includes a right angle bend, terminating with the head **62** which is removably fitted into the undercut groove **14** of the flashlight housing **110** as described above in connection with FIGS. 7-13.

Thus, there have been described preferred embodiments of flashlight apparatus removably securable to an object such as a bicycle and a binocular, as well as methods for effecting such securement. Other embodiments of the present invention, and variations of the embodiments described herein, may be developed without departing from the essential characteristics thereof. Accordingly, the invention should be limited only by the scope of the claims listed below.

I claim:

1. Flashlight apparatus securable to an object, comprising in combination:
  - a flashlight including a battery housing and a lamp housing;
  - an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;
  - an interface device adapted to be removably secured to the object and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight; and
  - said lamp housing secured to said battery housing in the vicinity of said one end for blocking removal of said head from said undercut groove through said opening when fitted into said undercut groove, said lamp housing being removable from the vicinity of said one end for permitting removal of said head from said undercut groove through said opening.
2. The apparatus according to claim 1, wherein:
  - said lamp housing is removable from the vicinity of said one end for permitting fitting of said head into said undercut groove through said opening.
3. The apparatus according to claim 1, wherein:
  - said lamp housing is removably secured to said housing.
4. The apparatus according to claim 1, wherein:
  - said lamp housing is removably secured to said housing forwardly of said one end of said undercut groove.
5. Flashlight apparatus securable to an object, comprising in combination:
  - a flashlight including a battery housing;
  - an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;
  - an interface device including a clamp removably securable to the object and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight; and
  - a component secured to said battery housing in the vicinity of said one end for blocking removal of said head from said undercut groove through said opening when fitted into said undercut groove, said component being removable from the vicinity of said one end for permitting removal of said head from said undercut groove through said opening.

6. Flashlight apparatus securable to a bicycle, comprising in combination:
- a flashlight including a battery housing;
  - an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;
  - an interface device adapted to be removably secured to the bicycle and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight; and
  - a component secured to said battery housing in the vicinity of said one end for blocking removal of said head from said undercut groove through said opening when fitted into said undercut groove, said component being removable from the vicinity of said one end for permitting removal of said head from said undercut groove through said opening.
7. Flashlight apparatus securable to a binocular, comprising in combination:
- a flashlight including a battery housing;
  - an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;
  - an interface device adapted to be removably secured to the binocular and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight; and
  - a component secured to said battery housing in the vicinity of said one end for blocking removal of said head from said undercut groove through said opening when fitted into said undercut groove, said component being removable from the vicinity of said one end for permitting removal of said head from said undercut groove through said opening.
8. Flashlight apparatus securable to an object, comprising in combination:
- a flashlight including a battery housing;
  - an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;
  - an interface device adapted to be removably secured to the object and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight;
  - a component secured to said battery housing in the vicinity of said one end for blocking removal of said head from said undercut groove through said opening when fitted into said undercut groove, said component being removable from the vicinity of said one end for permitting removal of said head from said undercut groove through said opening; and
- at least a portion of said undercut groove is closed at another end of said undercut groove for blocking said head at said other end when said head is fitted into said undercut groove.
9. The apparatus according to claim 8, wherein: said component is removable from the vicinity of said one end for permitting fitting of said head into said undercut groove through said opening.
10. The apparatus according to claim 8, wherein: said component is removably secured to said housing.
11. The apparatus according to claim 8, wherein: said component comprises a component of said flashlight.
12. The apparatus according to claim 8, wherein: said component is removably secured to said housing forwardly of said one end of said undercut groove.

13. The apparatus according to claim 8, wherein: said component comprises a lamp housing of said flashlight.
14. The apparatus according to claim 8, wherein: said second portion includes a clamp removably securable to the object.
15. The apparatus according to claim 8, wherein the object comprises a bicycle.
16. The apparatus according to claim 8, wherein the object comprises a binocular.
17. Flashlight apparatus securable to an object, comprising in combination:
- a flashlight including a battery housing;
  - an undercut groove in said battery housing, said undercut groove having an opening at one end thereof, said undercut groove including lateral grooves below overhangs;
  - an interface device adapted to be removably secured to the object and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight, said head of said interface device including lateral protrusions fitted into said lateral grooves when said head is fitted into said undercut groove; and
  - a component secured to said battery housing in the vicinity of said one end for blocking removal of said head from said undercut groove through said opening when fitted into said undercut groove, said component being removable from the vicinity of said one end for permitting removal of said head from said undercut groove through said opening.
18. The apparatus according to claim 17, wherein said lateral grooves are closed at another end of said undercut groove for blocking said lateral protrusions at said other end when said head is fitted into said undercut groove.
19. Flashlight apparatus securable to an object, comprising in combination:
- a flashlight including a battery housing and a lamp housing;
  - an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;
  - an interface device adapted to be removably securable to the object and including a head removably fitted into said undercut groove through said opening; and
  - said lamp housing secured to said battery housing in the vicinity of said one end and blocking removal of said head from said undercut groove through said opening, said lamp housing being removable from the vicinity of said one end for permitting said head to be removed from said undercut groove through said opening and for permitting said head when removed to be fitted into said undercut groove through said opening.
20. The apparatus according to claim 19, wherein: said lamp housing is removably secured to said housing.
21. The apparatus according to claim 19, wherein: said lamp housing is removably secured to said housing forwardly of said one end of said undercut groove.
22. Flashlight apparatus securable to an object, comprising in combination:
- a flashlight including a battery housing;
  - an undercut groove in said battery housing; said undercut groove having an opening at one end thereof;
  - an interface device including a clamp removably securable to the object and including a head removably fitted into said undercut groove through said opening; and

a component secured to said battery housing in the vicinity of said one end and blocking removal of said head from said undercut groove through said opening, said component being removable from the vicinity of said one end for permitting said head to be removed from said undercut groove through said opening and for permitting said head when removed to be fitted into said undercut groove through said opening.

**23.** Flashlight apparatus securable to a bicycle, comprising in combination:

a flashlight including a battery housing;

an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;

an interface device adapted to be removably securable to the bicycle and including a head removably fitted into said undercut groove through said opening; and

a component secured to said battery housing in the vicinity of said one end and blocking removal of said head from said undercut groove through said opening, said component being removable from the vicinity of said one end for permitting said head to be removed from said undercut groove through said opening and for permitting said head when removed to be fitted into said undercut groove through said opening.

**24.** Flashlight apparatus securable to a binocular, comprising in combination:

a flashlight including a battery housing;

an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;

an interface device adapted to be removably securable to the binocular and including a head removably fitted into said undercut groove through said opening; and

a component secured to said battery housing in the vicinity of said one end and blocking removal of said head from said undercut groove through said opening, said component being removable from the vicinity of said one end for permitting said head to be removed from said undercut groove through said opening and for permitting said head when removed to be fitted into said undercut groove through said opening.

**25.** In a method of securing a flashlight to an object, the steps comprising:

providing a battery housing for the flashlight including an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;

providing a lamp housing for said flashlight adapted to be secured to said battery housing in the vicinity of said one end of said undercut groove and to be removed from the vicinity of said one end;

providing an interface device adapted to be removably secured to the object and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight;

placing said flashlight to said interface device with said head fitted into said undercut groove through said opening; and

securing said lamp housing to said battery housing in the vicinity of said one end of said undercut groove for blocking removal of said head through said opening.

**26.** The method according to claim **25**, further including: securing said interface device to the object.

**27.** In a method of securing a flashlight to a bicycle, the steps comprising:

providing a battery housing for the flashlight including an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;

providing a component adapted to be secured to said battery housing in the vicinity of said one end of said undercut groove and to be removed from the vicinity of said one end;

providing an interface device adapted to be removably secured to the bicycle and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight;

placing said flashlight to said interface device with said head fitted into said undercut groove through said opening; and

securing said component to said battery housing in the vicinity of said one end of said undercut groove for blocking removal of said head through said opening.

**28.** In a method of securing a flashlight to a binocular, the steps comprising:

providing a battery housing for the flashlight including an undercut groove in said battery housing, said undercut groove having an opening at one end thereof;

providing a component adapted to be secured to said battery housing in the vicinity of said one end of said undercut groove and to be removed from the vicinity of said one end;

providing an interface device adapted to be removably secured to the binocular and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight;

placing said flashlight to said interface device with said head fitted into said undercut groove through said opening; and

securing said component to said battery housing in the vicinity of said one end of said undercut groove for blocking removal of said head through said opening.

**29.** In a method of securing a flashlight to an object, the steps comprising:

providing a battery housing for the flashlight including an undercut groove in said battery housing, said undercut groove having an opening at one end thereof and at least a portion of said undercut groove is closed at another end of said undercut groove;

providing a component adapted to be secured to said battery housing in the vicinity of said one end of said undercut groove and to be removed from the vicinity of said one end;

providing an interface device adapted to be removably secured to the binocular and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight;

placing said flashlight to said interface device with said head fitted into said undercut groove through said opening and said head blocked at said other end by said portion of said undercut groove; and

securing said component to said battery housing in the vicinity of said one end of said undercut groove for blocking removal of said head through said opening.

**30.** The method according to claim **29**, wherein:

during the component securing step, said component is secured to said housing forwardly of said one end of said undercut groove.

**31.** The method according to claim **29**, wherein:

said component comprises a component of said flashlight.

**32.** The method according to claim **29**, wherein:

said component comprises a lamp housing of said flashlight.

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33. In a method of securing a flashlight to an object, the steps comprising:

providing a battery housing for the flashlight including an undercut groove in said battery housing, said undercut groove having an opening at one end thereof, said undercut groove including lateral grooves under overhangs;

providing a component adapted to be secured to said battery housing in the vicinity of said one end of said undercut groove and to be removed from the vicinity of said one end;

providing an interface device adapted to be removably secured to the object and including a head adapted to be removably fitted into said undercut groove through said opening for holding said flashlight, said head of said interface device including lateral protrusions for being fitted into said lateral grooves;

placing said flashlight to said interface device with said head fitted into said undercut groove through said

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opening and said lateral protrusions fitted into said lateral grooves; and

securing said component to said battery housing in the vicinity of said one end of said undercut groove for blocking removal of said head through said opening.

34. The method according to claim 33, wherein:

said lateral grooves are closed at another end of said undercut groove; and

during the flashlight placing step, said head is blocked at said other end.

35. The method according to claim 34, wherein:

during the component securement step, said component is secured to said housing forwardly of said one end of said undercut groove.

36. The method according to claim 34, wherein:

said component comprises a lamp housing of said flashlight.

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